Global Energy Monitor

BRIEFING: JUNE 2023

PDP8: Vietnam inches closer to commissioning its last new coal plant, but key coal phase out and participation questions remain

Summary

- Vietnam's proposed coal capacity has shrunk by 92% since 2015, and the country's latest Power Development Plan represents significant progress towards the last new coal plant being commissioned in the country.
- The country plans to continue increasing coal-fired capacity to 30 gigawatts (GW) by 2030, but to align with this figure and the country's December 2022 Just Energy Transition Partnership (JETP) agreement, all remaining coal-fired power stations not yet in construction must be cancelled. This should include the An Khánh - Bắc Giang, Na Dương II, Sông Hậu II, and Nam Định I power stations, totalling 4 GW of new coal capacity being actively considered.
- In addition, projects in construction should be scrutinized and any having "difficulty in deploying" should be replaced with clean, renewable energy alternatives to minimize stranded asset risks.
- Vietnam must refine the phase-out plan for its notably young coal fleet, retiring all projects by 2040 at the latest and opting not to keep them online using experimental fuels such as biomass and ammonia.
- Vietnam's latest coal projections mean that it is currently leading the way in proposed coal capacity cancellations this year, and how the country's coal-to-clean planning and transition plays out could serve as a helpful model for other countries.

Power Development Plan VIII (PDP8) and New Coal

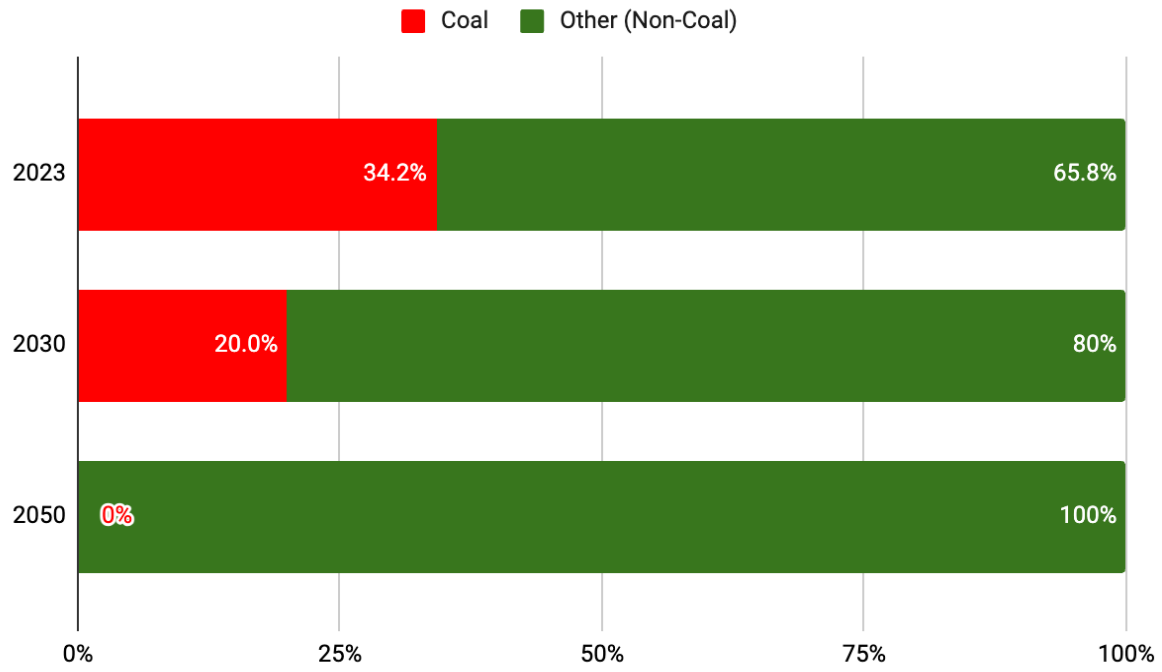
Over the last several years, Vietnam has steadily adjusted its national power development plan to fall more closely in line with global trends away from coal. Drafts released in July and December 2022 both shaved proposed coal plants off the list, many of which were unable to secure capital or otherwise attract international investors. In May 2023, the official Power Development Plan VIII (PDP8), was approved by the Prime Minister and released to the public.

At a time of increasing electricity demand, PDP8 heralds a cautiously optimistic message: while Vietnam's coal-fired capacity will continue to

increase through the end of the decade, the proportion of coal as a fuel type should steadily decrease as domestic gas and renewable energy plans dilute the percentage of electricity needs met by thermal coal.

PDP8 projects that coal will account for 20% of domestic energy generation in 2030, down from the one-third that coal occupies today. (Capacity refers to the maximum amount of electricity that can be produced at any one time, and generation is the amount of electricity that is actually generated over a period of time.) According to Global Energy Monitor (GEM), Vietnam has 25.9 GW of operating coal capacity as of May 2023; this number is expected to peak at 30 GW (or more precisely 30,127 MW per PDP8) at the end of the decade and then decline towards a zero-coal aspiration by 2050.

Figure 1. Vietnam's Energy Mix: PDP8's Projected Power Sources



Source: PDP8, May 2023

At the end of 2022, the Group of Seven (G7) countries agreed on a US$15.5 billion Just Energy Transition Partnership (JETP) funding package to support Vietnam's energy transition. The agreement included the expectation that the country would reach peak emissions by 2030 rather than 2035, a stipulation which PDP8 appears to align with.

Vietnam is expected to install less than 6 GW of additional coal capacity, similar to the 6.1 GW across six coal projects listed as "under construction" in PDP8: Na Duong II, An Khanh - Bac Giang, Vung Ang II, Quang Trach I, Van Phong I, and Long Phu I (first six rows in Table 1).

All other coal projects under development in Vietnam must be cancelled in order for the country to stay aligned with the JETP agreement. Two of the "construction" projects, Na Duong II and An Khanh - Bac Giang, are listed in this category but do not appear to actually be in construction in May 2023 based on satellite imagery of the sites (figures 2 & 3). The Quang Trach I plant also appears to be in early stages.

Figure 2. Proposed 110-megawatt Na Duong II plant site (May 2022 & May 2023)

Source: Planet Satellite imagery

Figure 3. Proposed 650-megawatt An Khanh - Bac Giang plant site (May 2022 & May 2023)

Source: Planet Satellite imagery

Eleven projects accounting for over 9 GW of capacity appear to have been officially cancelled in PDP8, while five additional projects were left in limbo and given until June 2024 to either make advancements or be terminated. This short list includes three projects that have already been presumed to be shelved, along with Song Hau II, which developers were reportedly working to finance in early 2023, and Nam Dinh I, which has already seen some forward momentum since being granted the mid-2024 deadline last month (more project information in rows 7 & 8 of Table 1). The thirteen month extension granted to these projects, totalling over 7.2 GW of proposed capacity, is only mentioned once in the PDP8 document and is on top of the upwards of ten years or more that developers have already been attempting to prove their viability.

PDP8 states that coal projects having "difficulty in deploying" will be replaced with alternatives. Reviewing these projects must be expedited to swiftly consider other options in line with the JETP agreement. **Any project beyond the agreed 6 GW capacity addition – and ideally including the two to three projects that do not appear to have entered construction, as well as any other project facing significant trouble such as stalled financing or other issues – ought to be replaced by other renewable energy alternatives.** Domestically produced, renewable power sources (i.e. solar and

wind plus storage) are Vietnam's best bet for energy independence.

Ultimately, PDP8 inches Vietnam closer to commissioning its last new coal plant (figure 4), which is in line with the dramatic contraction in the scale of new coal under consideration both globally and in Vietnam (figure 5) since 2015.

TABLE 1. Proposed Coal Plants (May 2023): Pre-permit, permitted, and in construction

Project (Capacity)	Status	Recent updates
An Khanh - Bac Giang (2 x 325 MW)	Pre-permit	In November 2022, the project was listed as delayed, and the developers had pivoted to securing domestic loans; financing for the power station was expected to be dispersed sometime in 2023. In March 2023, the project was described as "facing difficulties" at a Bắc Giang province assembly. **See Planet imagery above.*
Na Duong II (110 MW)	Pre-Permit	In April 2020, the National Steering Committee on Electricity Development identified lack of financing as the main barrier to the project's development. Vietnam's finance ministry had not agreed to provide the plant with a state-backed guarantee, so Vinacomin was forced to seek financing from domestic and foreign creditors. In April 2021, a consortium formed by Chinese state-owned manufacturer Dongfang Electric and other Vietnamese companies signed a contract with Vinacomin to build the plant. ***See** Planet imagery above.*
Quang Trach I (2 x ~700 MW)	*Construction	The project was initially being developed by Vietnam's state oil and gas group PetroVietnam before being taken over by state-run EVN in 2016 after years of delays. Construction reportedly began in December 2021, with Vietcombank providing VND 28.79 trillion. **Planet imagery in 2022-2023 showed initial site preparation, but did not appear to show clear foundation works.*
Long Phu I (2 x 600 MW)	Construction	The plant has faced numerous delays. As of June 2016, work was reportedly 24% complete, and by June 2021, it was stalled at 78% completion. In December 2022, PetroVietnam was seeking a new EPC contractor for the project, because the U.S. Department of Treasury imposed sanctions against Russia's Power Machines, the outgoing contractor, in 2018. ***See** Planet imagery here (2017-2023).*
Van Phong I (2 x 716 MW)	Construction	In October 2022, the project's related substation and transmission lines were reportedly nearing completion. By December 2022, the plant was 87% complete, with commercial operation expected by the end of 2023. **See Planet imagery here (2022-2023).*
Vung Ang II (2 x 665 MW)	Construction	In April 2021, work was reportedly ongoing to level the site for construction. The proposed expansion demonstrates commons dissonances: A 2022 report by Insure Our Future found that two of the project's main insurers, the Japanese companies MS&AD and Tokio Marine, had adopted coal exit policies before agreeing to insure the plant in 2021; a 2022 report by Reclaim Finance highlighted that despite joining GFANZ in 2021, Citi Bank provided over a billion dollars to Mitsubishi, one of several companies that made a combined US$439 million equity investment in the project. **Planet imagery in 2022-2023 appeared to show considerable construction progress.*
Song Hau II (2 x 1,000 MW)	Permitted	In January 2023, Toyo Ink was targeting to arrange $2.4 billion syndicated financing facilities with a debt/equity ratio of 75/25. As of 2022, Export-Import Bank of Malaysia was signed up as the MLA, bookrunner, and arranger for the project's debt financing. In February 2023, Toyo Ink was continuing to pursue the project. The investors and developers stated that they were awaiting approval by the Ministry of Industry and Trade. **Per PDP8, the project must either move forward by June 2024 or be terminated.*

Nam Dinh I (2 x 600 MW)	Pre-Permit	After a meeting with Secretary of Nam Dinh Party Committee Pham Gia Tuc on May 24, 2023, the general director of Taekwang Power Holdings stated that despite a decade of delays, the company would be continuing to pursue the project, with pre-construction procedures to be completed by the end of 2023. He stated the company has completed the "arrangement of capital." It is unclear if this was in reference to news of potential Chinese investment years before or something else. **Per PDP8, the project must either move forward by June 2024 or be terminated.*

Figure 4. Vietnam's Proposed Coal Plant Capacity (2020-2023)

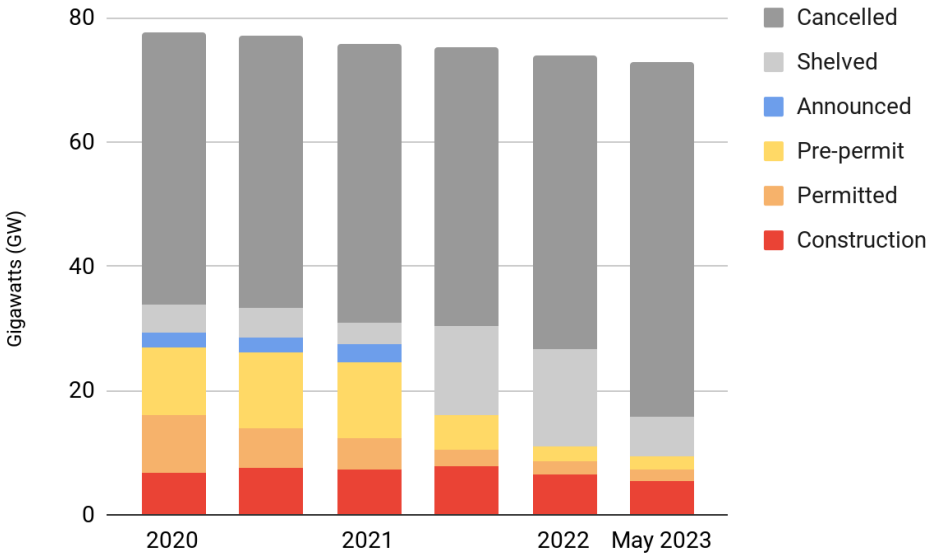
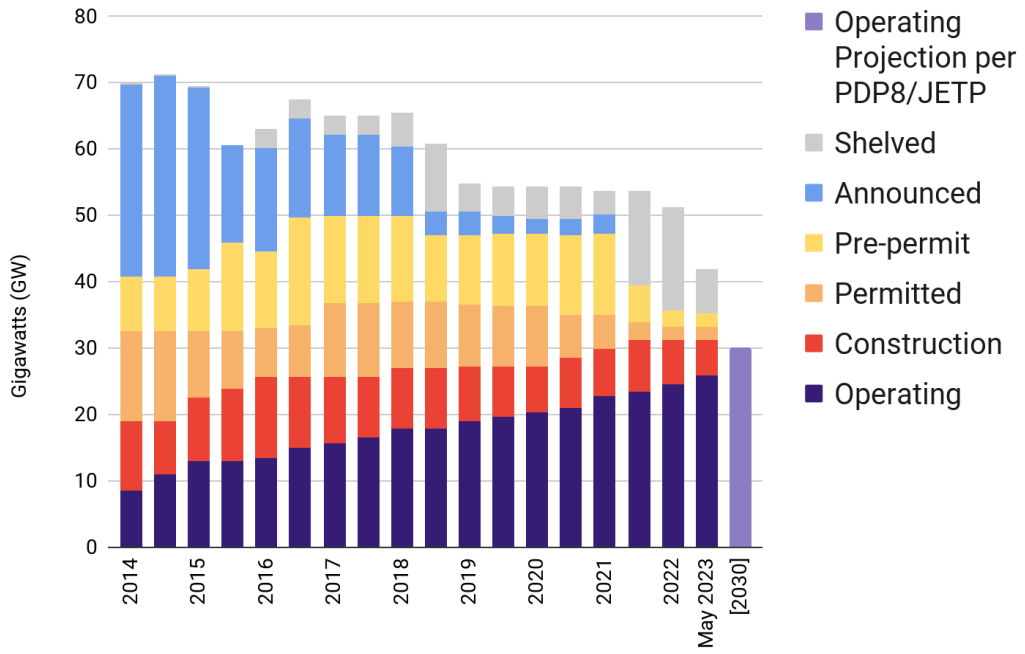


Figure 5. Vietnam's Operating and Proposed Coal Plant Capacity (2014-2023 & 2030 Projection)



Source for Figs. 4 & 5: Global Coal Plant Tracker (Jan. 2023 release & May 2023 revisions); figure 5 excludes cancelled capacity.

The country currently leads gas-fired capacity in development in Southeast Asia with 44 GW in the pipeline. Over the years, various proposed coal projects in Vietnam have been replaced by gas projects, including the Cong Thanh, Hai Phong III, Quang Trach II, Quynh Lap II, and Vung Ang III projects, which have all had an indicated fuel switch since 2020. A shift away from coal is essential, and planning for a true coal-to-clean transition away from fossil fuels is also imperative to avoid climate and economic risks.

Phasing Out Vietnam's Young Coal Fleet

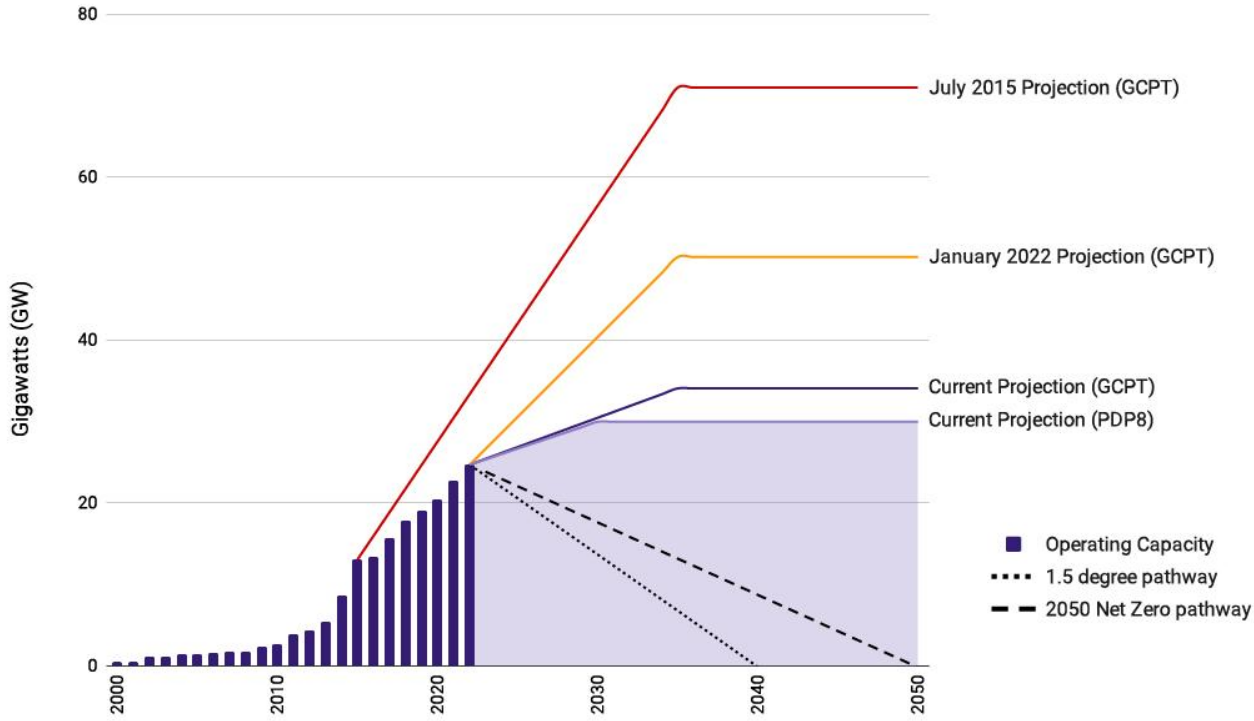
Although Vietnam's proposed coal capacity (announced, pre-permit, and permitted) has shrunk by 92% since 2015, its operating capacity has tripled. In addition to making progress towards the last new coal plant being commissioned in the country, the existing fleet of coal-fired power stations must also be proactively addressed in Vietnam's long-term energy security planning. The retirement of these power stations needs to be accelerated in order to keep pace with the Paris Agreement and the UN's "Acceleration Agenda", which calls for a complete phase-out of coal by 2040.

PDP8 states that coal plants should be retired after 40 years and notes that many coal plants would be converted to run on biomass and ammonia. These plans are troubling for several reasons: Vietnam has a notably young coal fleet, with nearly 80% of projects brought online within the last ten years, and conversion plans using so-called "clean" fuels such as biomass and ammonia are not truly carbon-free and only increase Vietnam's risk of future technological infeasibility and stranded assets. Other countries that have proposed similar conversion policies, such as Japan, have been heavily criticized for delaying a genuine transition to renewable, net zero energy generation. Firing ammonia releases fine particulate emissions, and producing the ammonia to burn for energy requires carbon dioxide due to existing technological constraints. Economically, favoring conversions over closures is an "immense waste of capital" and can require substantial subsidies or otherwise result in long-term financial losses.

Though there are legitimate concerns about coal's role in Vietnam's plans through 2030 and beyond, the updates made between various drafts and the 2023 final approved PDP8 indicate that Vietnam's energy strategy is moving in the right direction. Improving the transmission grid is a focus in PDP8, and momentum appears to be flowing towards community-based, renewably-fueled energy generation.

Like figures 4 & 5 above, figure 6 shows the dramatic contraction in new coal under consideration (compare current projections with the projections as of July 2015 and January 2022). The coal under active consideration and in PDP8 must collapse to be in line with the goals of the Paris Agreement and Vietnam's 2050 carbon emission neutrality ("Net Zero") target.

Figure 6. Vietnam's Operating Coal Plant Capacity (2000-2022); Various Coal Capacity Projections as of 2015, 2022, and 2023; and 2040/2050 Phase Out Pathways



Source: Global Coal Plant Tracker (GCPT) (historic releases & May 2023 update) and PDP8, May 2023.
PROJECTIONS: The projections presume all announced, pre-permit, permitted, and construction coal capacity in each release moves forward and is online by 2035 (for PDP8, the projection presumes 30 GW of coal by 2030); given the lack of plant level information regarding planned retirements, online capacity is also presumed to stay online through 2050 in all projections.
PATHWAYS: To achieve the Paris climate agreement's goal of limiting global temperature growth below 1.5 degrees celsius, reducing the use of coal for power generation is the single most important source of emissions reductions in emissions pathways. To align with that goal, modeling by the International Energy Agency and others finds OECD countries should eliminate coal power by 2030 and the rest of the world by 2040. To achieve a Net Zero target by 2050 without uncertain and expensive "clean coal" technologies, figure 6 assumes Vietnam should eliminate coal by 2050.

A Just Transition Requires True Participation

Human rights groups and others have highlighted that the Vietnamese government must uphold the highest human rights standards to strengthen and achieve its commitments. A just transition requires "true participation, the release of political prisoners, and restorative justice."

Although it was encouraging that political prisoner Nguy Thi Khanh, the founder of campaign group GreenID, was released from jail on May 15, politically motivated prosecutions of leading environmentalists and climate change activists continue to be a troubling development.

Just weeks after finalizing its power development plan, another leading advocate, Hoang Thi Minh Hong, was arrested on tax charges this month. Last year, Hong shut down Change, a group she founded in 2013, as Vietnam's crackdown on civil society leaders intensified. Three other climate and civil society leaders remain imprisoned – Mai Phan Loi, Dang Dinh Bach, and Bach Hung Duong. The arrests

were recently condemned by the United Nations High Commissioner for Human Rights, Marta Hurtado, who highlighted that the chilling effect of the government's actions is palpable among civil society in Vietnam, and risks stifling debate on issues of importance to society as a whole.

Transparency, energy equity, and long-term sustainability concerns appear to be considered – at least in part – by recent moves by the Vietnamese government, but these elements essential to a renewable energy transition must be fully embraced.

Vietnam Leading Global Coal Project Cancellations in 2023

It is important to recognize how far Vietnam has come towards cutting its reliance on coal. Based on a preliminary review by GEM of coal plant proposals still under consideration outside of China in 2023, Vietnam's latest coal projections means that the country is currently leading the way in proposed coal capacity cancellations this year. An estimated 20 to 25 GW of proposed coal capacity was formally cancelled or presumed cancelled in countries outside of China in the first quarter of 2023, with Vietnam's 9.6 GW drop between January and May 2023 (figure 4) representing almost half of the cancellations and significantly more than any other country.

To be sure, additional concerns need attention: the country has yet to make an official announcement about cancelling all projects not yet in construction; it must scope out ways to move planned retirements forward to 2040 at the latest; and a robust engagement plan with civil society in the ongoing JETP process must be devised.

But, JETPs have the potential to make a large impact in addressing the energy transition in emerging economies, and how Vietnam's coal-to-clean planning and transition plays out could serve as a helpful model for other countries. Countries still considering new coal power stations are openly accepting a more complicated and costly path to meeting climate commitments, significant threats to public health, and the energy insecurity that comes with relying on fossil fuels.

Background on Global Energy Monitor

Global Energy Monitor (GEM) develops and shares information in support of the worldwide movement for clean energy. By studying the evolving international energy landscape and creating databases, reports, and interactive tools that enhance understanding, GEM seeks to build an open guide to the world's energy system. Users of GEM's data and reports include the International Energy Agency, United Nations Environment Programme, the World Bank, and the Bloomberg Global Coal Countdown. Follow us at www.globalenergymonitor.org and on Twitter @GlobalEnergyMon.

Background on the Global Coal Plant Tracker

The Global Coal Plant Tracker is an online database that identifies and maps every known coal-fired generating unit and every new unit proposed since January 1, 2010 (30 MW and larger). Developed by Global Energy Monitor, the tracker uses footnoted wiki pages to document each plant and is updated biannually.

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